

An Electronic Mathematical Game

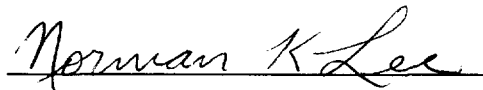
An Honors Thesis (HONRS 499)

by

Ellen L. Wellmeier

Thesis Advisor

Dr. N. Lee

A handwritten signature in cursive script, reading "Norman K. Lee", is written over a horizontal line.

Ball State University

Muncie, Indiana

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The senior honors thesis is to be a culmination of a student's academic endeavors as an undergraduate student. through my time in the honors college, I have often wondered what would be appropriate for a secondary mathematics education major to choose to do for a thesis project. I wanted to choose something that not only interested me but would also prove to be something I could use in my classroom. What follows is a brief summary of how my idea originated, a description, the process involved in building it, and its usefulness to me as a future teacher.

Since the thesis is to be a culmination of experiences, it seems appropriate that my idea originated from a combination of class and my experience in participation. In lecture, my class discussed the possibility of creating an electronic bulletin board. This idea, combined with my realization through participation that many students do not know the basic skills necessary for thier school mathematics classes, helped me to arrive at my idea for my project. I decided to create an electronic game to help students with their mathematical skills. This game should be flexible enough to be able to drill students in problem areas and also provide enrichment for above average students.

In deciding on the appearance of the game, I decided it would be easiest for the students to use if it has a base that slants the top toward the student. The sides will be made of plywood, the top will be made of pegboard (to provide holes so the student can choose an answer), and

on top of the pegboard there will be a poster board that has the questions on it. Each individual topic will have a separate poster board with questions on it dealing with that particular topic. Each poster board will be laminated for longer usage. The students will be given two possible answers for each question. The correct answers will be wired to a transformer; therefore, the completed circuit will activate a light bulb, signaling to the student that their answer is correct.

After I had my idea and a basic plan, I was ready to begin. The first step is to choose a professor to work with, I chose Dr. N. Lee. Next, the Honors College has to approve the project before beginning. After receiving approval from Dr. Whittig, I began to think about how many game boards I wanted to make and what topics to use. I decided to make three dealing with; multiplication tables, metric conversions, and standard measurement conversions. Through my experience from teaching during participation I was able to come up with problems that I knew students tend to have trouble with. After having Dr. Lee approve the problems I chose, I put them on poster boards. The next big step was to figure out the electronic part. My father and I spoke to an electrician about the best way to wire it. He suggested using a transformer rather than batteries to avoid the possibility of the students receiving a small shock. Having a grasp on the electronic part of the project, I began on the base. I cut and stained the wood and then

assembled them for the base. I also added a handle for easier carrying. The holes that correspond to the correct answers were marked, then with some help from my father we began wiring the holes. The holes that are seen but are incorrect also have copper lining so the answer is not obvious to the students. The next step was to connect the wiring to the transformer and connect the transformer to the bulb. This completed the game part so I needed to laminate the poster boards and punch the holes in them. Next I checked to be sure that the correct answers corresponded with the hole that made the bulb light up. I then took several pictures so I could include them with the final project. Since I am unable to turn in the game itself, the pictures will help to visualize the project. Finally, I had to type the paper, include the pictures and turn it in to Dr. Lee.

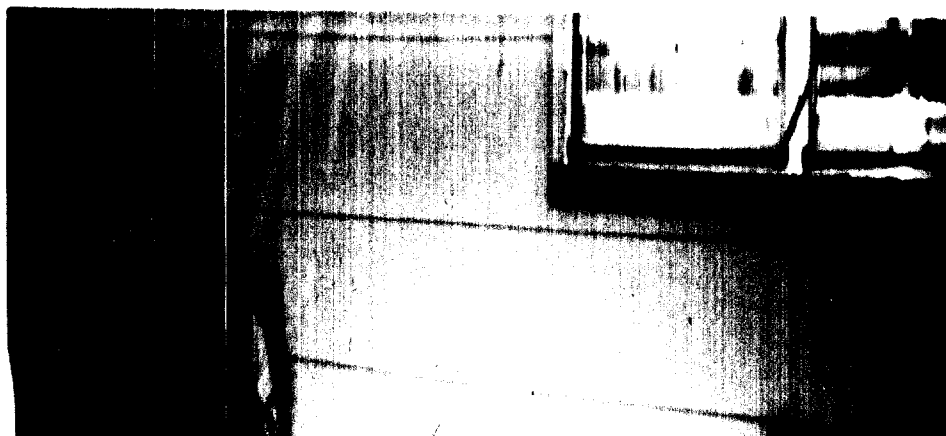
I believe that this electronic game board will prove to be very useful to me in the future. I can visualize having the game in my classroom to drill students who need extra help on a particular topic and to provide the above average students with enrichment activities. The game is beneficial to both groups of students because they receive an immediate response as to whether or not their answer is right or wrong. I also like the fact that there is no limit to the number of games I can make. Once I am in my own classroom, I can make boards that deal with the topics I will be teaching and that I find the students need help with. The three boards that I have already made are aimed toward the middle

school age. They can however, possibly be of use at the high school level also. There are numerous possibilities for the ways I can use this game. For example, I can make boards dealing with the topic we are studying and set up a type of tournament for the students. This will be a good choice for a group of competitive students. This electronic game has unlimited possibilities and I plan on using it often in my classroom.

Instructions

1. Choose the poster board with the desired topic.
2. Place the poster board on the pegboard.
3. Using the probe, choose the correct answer.
4. If the correct answer is chosen, the bulb will light up.

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In progress